

CLAIMS

What is claimed is:

1. A projection screen comprising a substrate having thereon:
one or more fluorescent materials that:
emit visible light with an incidence of one or more ranges of
wavelengths of light; and
absorb visible light in at least one other range of wavelengths that is
not included in the one or more ranges,
wherein the visible light emitted by the one or more fluorescent materials
provides an image with an incidence of an output from a projector having
wavelengths of light in the one or more ranges.
2. A projection screen as described in claim 1, further comprising one
or more absorption materials that absorb wavelengths of light that are not
included in the one or more ranges and are not included in the at least one other
range.
3. A projection screen as described in claim 2, wherein one or more
absorption materials:
are disposed between the one or more fluorescent materials and the
substrate; and
reflect wavelengths of light in the one or more ranges.
4. A projection screen as described in claim 1, wherein the output from
the projector is directional and the emitted visible light has a Lambertian
distribution.
5. A projection screen as described in claim 1, wherein the substrate
is transparent to the visible light.
6. A projection screen as described in claim 1, wherein the one or

more ranges include:

- a range of red wavelengths of visible light;
- a range of green wavelengths of visible light; and
- a range of blue wavelengths of visible light.

7. A projection screen as described in claim 1, wherein the emitted visible light includes:

- a range of red wavelengths of visible light;
- a range of green wavelengths of visible light; and
- a range of blue wavelengths of visible light.

8. A projection screen as described in claim 1, wherein the one or more ranges include a range of ultraviolet wavelengths.

9. A projection screen as described in claim 1, wherein the one or more ranges include a range of ultraviolet wavelengths and a range of visible wavelengths.

10. A projection screen as described in claim 1, wherein the one or more fluorescent materials include an optical dye selected from the group consisting of:

- Texas Red;
- Sytox Blue;
- Alexa 633;
- EYFP; and
- any combination thereof.

11. A projection screen comprising a substrate having thereon:
one or more fluorescent materials that:

- emit visible light with an incidence of one or more ranges of UV wavelengths of light;
- wherein the visible light emitted by the one or more fluorescent materials

contributes to an image with an incidence of an output from a projector having wavelengths of light in the one or more ranges.

12. A projection screen as described in claim 11, further comprising one or more absorption materials that absorb wavelengths of light that are not included in the one or more ranges and are not included in the at least one other range.

13. A projection screen as described in claim 11, wherein the emitted visible light includes:

- a range of red wavelengths of visible light;
- a range of green wavelengths of visible light; and
- a range of blue wavelengths of visible light.

14. A projection screen as described in claim 11, wherein the output from the projector is directional and the emitted visible light has a Lambertian distribution.

15. A projection screen as described in claim 11, further comprising one or more absorption materials that absorb wavelengths of light that are not included in the one or more ranges.

16. A projection system comprising:
a projector that is configured to project an image composed of one or more ranges of wavelengths of light; and
a projection screen for receiving the projected image that is configured to:
emit visible light with the incidence of the one or more ranges of wavelengths of light; and
absorb visible wavelengths of light in at least one other range that is not included in the one or more ranges.

17. A projection system as described in claim 16, wherein the projection

screen further comprises a fluorescent material that emits the visible light.

18. A projection system as described in claim 16, wherein the emitted visible light has a Lambertian distribution.

19. A projection system as described in claim 16, wherein the projection screen further comprises an absorption material that absorbs the visible light having wavelengths in at least one other range that is not included in the one or more ranges.

20. A projection system as described in claim 16, wherein the emitted visible light includes:

- a range of red wavelengths of visible light;
- a range of green wavelengths of visible light; and
- a range of blue wavelengths of visible light.

21. A projection system as described in claim 16, wherein the one or more ranges include a range of ultraviolet wavelengths.

22. A projection system as described in claim 16, wherein the one or more ranges include a range of ultraviolet wavelengths and a range of visible wavelengths.

23. A projector comprising:

a light source that outputs one or more ranges of UV wavelengths of light;
and

an image forming device that forms an image composed of the one or more ranges of UV wavelengths of light such that with the incidence of the image on a projection screen that includes one or more fluorescent materials, the projection screen emits visible light such that the image is viewable by the human eye.

24. A projector as described in claim 23, wherein the emitted visible light includes:

- a range of red wavelengths of visible light;
- a range of green wavelengths of visible light; and
- a range of blue wavelengths of visible light.

25. A projector as described in claim 23, wherein the image that is formed by the projector is directional and the emitted visible light has a Lambertian distribution.

26. A projection system comprising:

a projector that is configured to project an image composed of one or more ranges of UV wavelengths of light; and

a projection screen for receiving the projection image that is configured to emit visible light with the incidence of the one or more ranges of wavelengths of light.

27. A projection system as described in claim 26, further comprising one or more absorption materials that absorb wavelengths of light that are not included in the one or more ranges and are not included in the at least one other range.

28. A projection system as described in claim 26, wherein the projected is directional and the emitted visible light has a Lambertian distribution.

29. A projection system as described in claim 26, wherein the emitted visible light includes:

- a range of red wavelengths of visible light;
- a range of green wavelengths of visible light; and
- a range of blue wavelengths of visible light.

30. A method comprising:

projecting, by a projector, an image composed of one or more ranges of wavelengths of light on a projection screen; and

emitting visible light by the projection screen with the incidence of the projected image, wherein the emitted visible light displays the projected image.

31. A method as described in claim 30, wherein the displayed image is a full-color image when viewed by a human eye.

32. A method as described in claim 30, wherein the one or more ranges include a range of ultraviolet wavelengths.

33. A method as described in claim 30, wherein the projected image is directional and the emitted visible light has a Lambertian distribution.

34. A method as described in claim 30, wherein the one or more ranges include a range of ultraviolet wavelengths and a range of visible wavelengths.

35. A method comprising:

forming over a substrate one or more fluorescent materials that emit visible light with an incidence of one or more ranges of wavelengths of light; and

forming over the substrate one or more absorption materials that absorb visible light in at least one other range of wavelengths that is not included in the one or more ranges,

wherein the visible light emitted by the one or more fluorescent materials provides an image with an incidence of an output from a projector having wavelengths of light in the one or more ranges.

36. A method as described in claim 35, wherein the one or more ranges include a range of ultraviolet wavelengths.

37. A method as described in claim 35, wherein the emitted visible light has a Lambertian distribution.

38. A method as described in claim 35, wherein the one or more ranges include a range of ultraviolet wavelengths and a range of visible wavelengths.

39. A projection screen comprising a structure made by the method of claim 35.

40. A system comprising:
means for projecting an image composed of one or more ranges of wavelengths of light; and
means for displaying the projected image that is configured to:
emit visible light with an incidence of the one or more ranges of wavelengths of light; and
absorb visible wavelengths of light in at least one other range that is not included in the one or more ranges.

41. A system as described in claim 40, wherein the projecting means includes a projector.

42. A system as described in claim 40, wherein the displaying means includes a projection screen.